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AUTHOR Cody, Ronald P.
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ABSTRACT

Previous users of Coursewriter, an interactive computer-based learning system, experienced difficulty retrieving student progress reports. A program has been written which will permit the person in charge of the course to request student reports, test scores, connect time, and class statistics. Sample program interactions and a copy of the program are included. (EMH)

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ED129308

A REPORTING SYSTEM

FOR COURSEWRITER PROGRAMS

DR. RONALD P. CODY
NEW JERSEY EDUCATIONAL COMPUTER
NETWORK, INC.

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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INTRODUCTION

One difficulty that Coursewriter users face, is the complex procedures required to obtain a summary of progress of their students using a Coursewriter tutorial. Present methods require the use of the student response file and the STRAP program, or the use of Coursewriter functions which can collect data from several different student numbers.

A small section of Coursewriter code has been developed which will allow up to 36 students to share a student number (not simultaneously) and have the system maintain statistics for each student. The person in charge of the course can retrieve student data by signing on to the course and entering a password. He can then request student reports (student names, test scores, and total time on the system), class statistics (class connect time, class average, number of students who took the test, and standard deviation), or register more student names for the course.

For each student, the program also makes room for an additional counter and a return register. The return register could be used to store a restart point for each student.

All the code necessary for these operations, is in standard Coursewriter III and does not use any functions.

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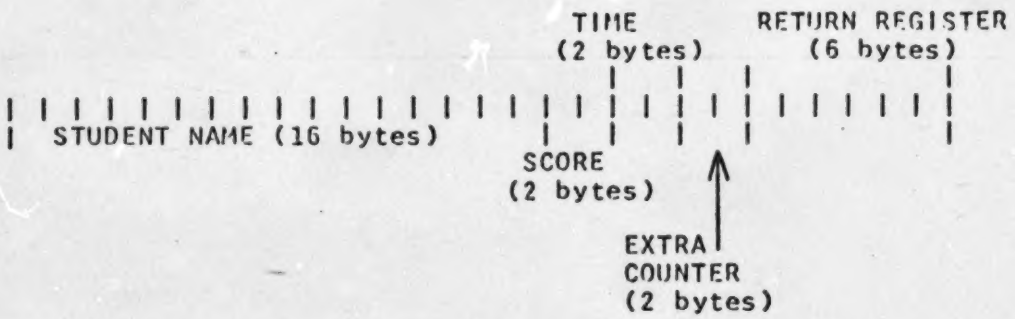
In order to store student data under a single Coursewriter student number, two blocks of auxiliary storage are assigned for each number registered. Storage in the auxiliary area is allocated as follows:



With 28 bytes per student record, 2 auxiliary blocks provide for up to 36 student records. The number of student numbers presently assigned space in auxiliary storage is stored starting at position 1008.

A student using a course which includes this reporting facility is in no way aware of its existence; he merely signs on, enters his "student number" and begins to work. In the example that follows, the quiz is a "dummy" quiz with only 3 questions. In actual practice, the reporting facility can be used to capture any score. To enter the reporting section, it is necessary to type a password. For the example shown below, the password is "password". As the sample interaction shows, the reporting section allows the instructor to obtain a student report, assign student numbers and names, clear individual student numbers (or all records), list unused student numbers, and calculate class statistics (total connect time, class average, and standard deviation).

Since there could possibly be a problem in deciding if a student had not yet taken a test or if he had taken it but scored a zero, the auxiliary area is first initialized to blanks. When 2 bytes of blanks are placed into a counter, an integer value of 257 is obtained.

At this point, I would like to comment on some of the coding techniques used to produce the student reports.

First, to retrieve a student report (student name, test score, and connect time), it is necessary to check if the name field is blank. (See the section of code under the label "report".) The trick here, is to load the appropriate portion of auxiliary into buffer zero, turn

on parameter switch 15 (which prevents polling) and have a 'ca' which consists of 16 blanks (the length of the name field). A match will then indicate an unused student record.

Each time a student is registered or removed from the file, the resulting number of registered students is stored in auxiliary storage (positions 1008 and 1009). This way, when reports or statistics are calculated, it is not necessary to examine the entire auxiliary area (which is time consuming).

The statistics section (see label "stat") is of some interest, especially the method of calculating the standard deviation. Since Coursewriter does not allow square-root calculations (without the use of functions), the following iterative formula is used: (See labels "root" and "112")

$$r_{i+1} = 1/2(r_i + n/r_i)$$

Where r_{i+1} is the root

n is the number you want to find the square root of (in this case, the variance)

r_i is the ith root. r_1 is an initial guess.

SAMPLE PROGRAM INTERACTION

```
please hit the "return" key to begin.
password
enter request, type "list" to see a list
of options, or sign off.
list
the list of options are as follows:

request       meaning
-------------------------------------
list        list options
report      student number, name, and score
assign      assign a student number and name
clear       clear a single student number and name
            or all student records
free        lists unused student numbers
stat        calculates total connect time, class
            average, and standard deviation.
sign off    signs you off the system


request--report
type a student number, the word "all" to receive
all the student reports, or "end."
4
student number: 4  name:      jeff schram  score:100 time: 0:10
type a student number, the word "all" to receive
all the student reports, or "end."
all

number      name          score  time
-------------------------------------
   1         ronald cody  100     0:13
   2       barry dusault   33     0: 2
   4         jeff schram  100     0:10
   5        anna corsaro

request--stat

this may take a few moments - please wait.

total student connect time: 0:25
the class average is    77.
the total number of students who took the test is     3.
the standard deviation is   38.

request--assign
```

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```
enter student number (1-36). type the
word "end" when you are finished.
6
enter student's name (with a maximum of
16 characters (including blanks) for the name field.
harvey long junior the third
name field must be less than 16 characters.
harvey long
number 7
name joe denk
number end

request--free
free student numbers:
    3     8     9    10    11    12    13    14    15    16    17    18
   19    20    21    22    23    24    25    26    27    28    29    30
   31    32    33    34    35    36
request--sign off
LINE IS SIGNED OFF
```

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```
please hit the "return" key to begin.


what is your student number?  5
your name is      anna corsaro. is this correct?
no
you may try another number or sign off.
what is your student number?  27
that student number is not registered.
you may try another number or sign off.
what is your student number?  6
your name is      harvey long. is this correct?
yes
here is your quiz:
2-1=  1
correct
4+0=  40
no, the answer was 4.
5+8=  13
very good
your score was    66%
come back again.

END OF COURSE PLEASE SIGN OFF.
sign off
LINE IS SIGNED OFF



please hit the "return" key to begin.
password
enter request, type "list" to see a list
of options, or sign off.
r
type a student number, the word "all" to receive
all the student reports, or "end."
all

number     name          score  time
-----------------------------------
   1        ronald cody   100    0:13
   2      barry dusault    33    0: 2
   4        jeff schram   100    0:10
   5       anna corsaro
   6        harvey long    66    0: 6
   7           joe denk

request--sign off
LINE IS SIGNED OFF
```

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```
auxil
  1-  0 pr
  1-  1 ld 0/c27
110
  1-  0 pr
  1-  1 ld  <-- (64 blanks go here) -->  /a,(c27),64
  1-  2 ad 64/c27
  1-  3 br 113/c27,ge,1024
  1-  4 br 110
113
  1-  0 pr
  1-  1 ld 0/c0
  1-  2 ld c0/a,1008,2
init
  1-  0 pr
  1-  1 ld 10111xxx111101x0/p
  1-  2 ld 1/p21
  1-  3 ld 0/s28
  1-  4 ld init/r$
  1-  5 ld 0/c1-c30
  1-  6 ld t0/c24
  1-  7    ** c24 holds connect time
passwd
  1-  0 qu please hit the "return" key to begin.

  1-  1 ca password
  1-  2 br next
  1-  3 nx
start
  1-  0 pr
  1-  1 ty what is your student number?
  1-  2 ca(w) 1 2 3 4 5 6 7 8 9
  1-  3 ld b0,0,1/c25
  1-  4 ca(w) 10 11 12 13 14 15 16 17 18 19 20 21 22 23
  1-  5 cb(w) 24 25 26 27 28 29 30 31 32 33 34 35 36
  1-  6 ld b0,0,2/c25
  1-  7 un please type a number from 1 to 36.

check
  1-  0 pr
  1-  1 ld c25/c0
  1-  2 sb 1/c0
  1-  3 mp 28/c0
  1-  4 ld a,(c0),16/b0
  1-  5 ld 1/p15
  1-  6 ca  <-- (16 blanks go here)
  1-  7 ty that student number is not registered.

  1-  8    you may try another number or sign off.

  1-  9 ld 0/p15
  1- 10 br start
  1- 11 nx
  2-  0 pr
  2-  1 ld 0/p15
  2-  2 ty your name is
  2-  3 ty b0
  2-  4 ty . is this correct?
  2-  5 ca(1) y&
  2-  6 br ok
  2-  7 ca(1) n&
  3-  0 pr
  3-  1 br **4   /c28,1,1
  3-  2 ty please consult with your teacher to find

  3-  3    out your number.

  3-  4 br end
  3-  5 ty you may try another number or sign off.

  3-  6 ad 1/c28
  3-  7 br start
ok
  1-  0 qu here is your quiz:

  1-  1    2-1=
  1-  2 ca(w) 1 1. one
  1-  3 ty correct

  1-  4 ad 1/c1
  1-  5 nx
  1-  6 ty incorrect

  2-  0 qu 4+0=
  2-  1 ca(w) 4 4. four
  2-  2 ty correct

  2-  3 ad 1/c1
  2-  4 nx
  2-  5 ty no, the answer was 4.

  3-  0 qu 5+8=
  3-  1 ca(w) 13 13. thirteen
  3-  2 ty very good

  3-  3 ad 1/c1
  3-  4 nx
  3-  5 ty sorry, not correct

  4-  0 pr
  4-  1 mp 100/c1
  4-  2 dv 3/c1
  4-  3 ld c1/b0
  4-  4 ty your score was
  4-  5 ty b0
  4-  6 ty %

  4-  7 ty come back again.

  4-  8 sb 1/c25
  4-  9 mp 23/c25
  4- 10 ad 16/c25
  4- 11 ld c1/a,(c25),2
  4- 12 ad 2/c25
  4- 13 ld t0/c0
  4- 14 br end/c0,le,c24
  4- 15 sb c24/c0
  4- 16 ld a,(c25),2/c24
  4- 17 br **2/c24,e,257
  4- 18 ad c24/c0
  4- 19 ld c0/a,(c25),2
  4- 20 br end
```

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```
report
  1-  0 qu type a student number, the word "all" to receive

  1-  1    all the student reports, or "end."

  1-  2 ca(1) &end&
  1-  3 br next
  1-  4 ca(1) &all&
  1-  5 br reprta
  1-  6 ca(w) 1 2 3 4 5 6 7 8 9
  1-  7 ld b0,0,1/c27
  1-  8 ca(w) 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
  1-  9 cb(w) 25 26 27 28 29 30 31 32 33 34 35 36
  1- 10 ld b0,0,2/c27
  1- 11 un please type a number from 1 to 36.

  2-  0 pr
  2-  1 ld 1/p15
  2-  2 ld c27/c29
  2-  3 sb 1/c27
  2-  4 mp 28/c27
  2-  5 ld a,(c27),16/b0
  2-  6 ca <------(16 blanks go here)
  2-  7 ty student
  2-  8 ld c0/b0
  2-  9 ty  not registered.

  2- 10 ld 0/p15
  2- 11 br report
  2- 12 ca(1) &
  2- 13 ld 0/p15
  2- 14 ld student number:    name:                    score:    time:  :
/b0
  2- 15 ld c29/b0,15,2
  2- 16 ld a,(c27),16/b0,24,16
  2- 17 ad 16/c27
  2- 18 ld a,(c27),2/c0
  2- 19 br **2/c0,e,257
  2- 20 ld c0/b0,48,3
  2- 21 ad 2/c27
  2- 22 ld a,(c27),2/c0
  2- 23 br **7/c0,e,257
  2- 24 ld c0/c29
  2- 25 dv 60/c29
  2- 26 mp 60/c29
  2- 27 sb c29/c0
  2- 28 ld c29/b0,57,2
  2- 29 ld c0/b0,60,2
  2- 30 ty b0
  2- 31 br report
reprta
  1-  0 pr
  1-  1 ld 1/p15
  1-  2 ld 0/c27
  1-  3 ld 0/c26
  1-  4 ty

  1-  5 ty number     name          score  time

  1-  6 ty ------------------------------------
```

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```
  1-  7 ld a,1008,2/c28
 12
  1-  0 pr
  1-  1 ld   <-(40 blanks go here) ->
/b5
  1-  2 ad 1/c26
  1-  3 br **3/c26,1e,c28
  1-  4 ld 0/p15
  1-  5 br next
  1-  6 ld a,(c27),16/b0
  1-  7 ca          (16 blanks go here)
  1-  8 ad 28/c27
  1-  9 ad 1/c28
  1- 10 br 12
  1- 11 ca(1) &
  1- 12 ld c26/b5,2,2
  1- 13 ld b0,0 16/b5,7,16
  1- 14 ad 16/c27
  1- 15 ld a,(c27),2/c0
  1- 16 br **2/c0,e,257
  1- 17 ld c0/b5,25,3
  1- 18 ad 2/c27
  1- 19 ld a,(c27),2/c0
  1- 20 br **8/c0,e,257
  1- 21 ld c0/c29
  1- 22 dv 60/c29
  1- 23 mp 60/c29
  1- 24 sb c29/c0
  1- 25 ld :/b5,33,1
  1- 26 ld c29/b5,31,2
  1- 27 ld c0/b5,34,2
  1- 28 ty b5
  1- 29 ad 10/c27
  1- 30 br 12/c27,1,1008
  1- 31 ld 0/p15
  1- 32 br next
 next
  1-  0 pr
  1-  1 br **5   /s28,1
  1-  2 ld 1/s28
  1-  3 ty enter request, type "list" to see a list

  1-  4    of options, or sign off.

  1-  5 br pr
  1-  6 ty
request--
  2-  0 pr
  2-  1 ca(1) l&
  2-  2 br list
  2-  3 ca(1) r&
  2-  4 br report
  2-  5 ca(1) a&
  2-  6 br assign
  2-  7 ca(1) c&
  2-  8 br clear
  2-  9 ca(1) f&
  2- 10 br free
  2- 11 ca(1) s&
  2- 12 br stat
  2- 13 un please choose an option from the option list.

  2- 14    type "list" if you would like to see the list.
```

```
list
  1-  0 qu the list of options are as follows:

  1-  1    request       meaning
  1-  2    ---------------------------------------
  1-  3    list          list options
  1-  4    report        student number, name, and score
  1-  5    assign        assign a student number and name
  1-  6    clear         clear a single student number and name
  1-  7                  or all student records
  1-  8    free          lists unused student numbers
  1-  9    stat          calculates total connect time, class
  1- 10                  average, and standard deviation.
  1- 11    sign off      signs you off the system

  1- 12 br next
assign
  1-  0 pr
  1-  1 ld 0/s29
11
  1-  0 pr
  1-  1 br ++4   /s29,1
  1-  2 ty enter student number (1-56). type the

  1-  3    word "end" when you are finished.

  1-  4 br pr
  1-  5 ty number
  2-  0 pr
  2-  1 ca(1) &end&
  2-  2 br next
  2-  3 ca(w) 1 2 3 4 5 6 7 8 9
  2-  4 ld b0,0,1/c28
  2-  5 ca(w) 10 11 12 13 14 15 16 17 18 19 20
  2-  6 cb(w) 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
  2-  7 id b0,0,2/c28
  2-  8 un please type a number from 1 to 36, or the word "end."

  3-  0 pr
  3-  1 br ++5   /s29,1
  3-  2 ty enter student's name (with a maximum of

  3-  3    16 characters (including blanks) for the name field.

  3-  4 ld 1/s29
  3-  5 br pr
  3-  6 ty name
  4-  0 pr
  4-  1 ca(1) +&
  4-  2 sb 1/c29
  4-  3 br ++3/c29,le,16
  4-  4 ty name field must be less than 16 characters.

  4-  5 br re
  4-  6 ld c28/c0
  4-  7 sb 1/c0
  4-  8 mp 28/c0
  4-  9 ld b0,0,(c29)/a,(c0),16
  4- 10 ld a,1008,2/c0
  4- 11 ad 1/c0
  4- 12 ld c0/a,1008,2
  4- 13 br 11
clear
  1-  0 pr
  1-  1 ty enter student number to be cleared, type "all"

  1-  2    to clear all the student records, or "end."

  1-  3 ca(1) &end&
  1-  4 br next
  1-  5 ca(1) &all&
  1-  6 br cleara
  1-  7 ca(w) 1 2 3 4 5 6 7 8 9
  1-  8 ld b0,0,1/c27
  1-  9 ca(w) 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
  1- 10 cb(w) 25 26 27 28 29 30 31 32 33 34 35 36
  1- 11 ld b0,0,2/c27
  1- 12 un please type a number from 1 to 36, all, or end.

  2-  0 pr
  2-  1 sb 1/c27
  2-  2 mp 28/c27
  2-  3 ld  (28 blanks go here)  /a,(c27),28
  2-  4 ty student number
  2-  5 ty b0
  2-  6 ty  cleared.

  2-  7 ld a,1008,2/c0
  2-  8 sb 1/c0
  2-  9 ld c0/a,1008,2
  2- 10 br clear
cleara
  1-  0 pr
  1-  1 ld 0/c27
  1-  2 ld 0/c0
  1-  3 ld c0/a,1008,2
14
  1-  0 pr
  1-  1 ld ←(64 blanks go here)——————————→  /a,(c27),64
  1-  2 ad 64/c27
  1-  3 br next/c27,ge,1024
  1-  4 br 14
```

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```
stat
  1-  0 pr
  1-  1    //c28 will accumulate total
  1-  2    //c27 will count students
  1-  3    //c29 will hold average (also scratch counter)
  1-  4    //c0 will be pointer
  1-  5    //c26 will accumulate time
  1-  6    //c25 holds number of students registered
  1-  7    //c24 counts times through the loop
  1-  8 ty
this may take a few moments - please wait.


  1-  9 id 0/c24-c29
  1- 10 id 0/c0
  1- 11 id a,1008,2/c25
 16
  1-  0 pr
  1-  1 id 1/p15
  1-  2 id a,(c0),16/b0
  1-  3 ad 16/c0
  1-  4 ca   <-- (16 blanks go here)
  1-  5 ad 12/c0
  1-  6 br 16
  1-  7 aa(1) &
  1-  8 ad 1/c24
  1-  9 id a,(c0),2/c29
  1- 10 br ++3   /c29,e,257
  1- 11 ad c29/c28
  1- 12 ad 1/c27
  1- 13 ad 2/c0
  1- 14 id a,(c0),2/c29
  1- 15 br ++2/c29,e,257
  1- 16 ad c29/c26
  1- 17 ad 10/c0
  1- 18 br 16/c24,1,c25
  1- 19 id 0/p15
 ave
  1-  0 pr
  1-  1 br ++9/c26,e,0
  1-  2 id total student connect time:  : (2 blanks go here)
/b0
  1-  3 id c26/c29
  1-  4 dv 60/c29
  1-  5 mp 60/c29
  1-  6 sb c29/c26
  1-  7 id c29/b0,27,2
  1-  8 id c26/b0,30,2
  1-  9 ty b0
  1- 10 br ++3   /c27,ge,1
  1- 11 ty there are no scores and an average cannot be computed.

  1- 12 br next
  1- 13 id c28/c29
  1- 14 dv c27/c29
  1- 15 ty the class average is
  1- 16 id c29/b0
  1- 17 ty b0
  1- 18 ty .

  1- 19 ty the total number of students who took the test is
  1- 20 id c27/b0
  1- 21 ty b0
  1- 22 ty .
```

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```
sd
  1-  0 pr
  1-  1 br ++4   /c27,g,1
  1-  2 ty since there is only one student, a

  1-  3    standard deviation cannot be computed.

  1-  4 br next
  1-  5    //c28 will add deviations
  1-  6    //c25 will count students
  1-  7 id 0/c28
  1-  8 id 0/c25
  1-  9 id 0/c0
111
  1-  0 pr
  1-  1 ad 16/c0
  1-  2 id a,(c0),2/c26
  1-  3 br ++9   /c26,e,257
  1-  4 ad 1/c25
  1-  5 sb c29/c26
  1-  6 mp c26/c26
  1-  7 br ++3   /c26,le,32767
  1-  8 ty standard deviation is too large to compute.

  1-  9 br next
  1- 10 ad c26/c28
  1- 11 br root  /c25,ge,c27
  1- 12 ad 12/c0
  1- 13 br 111
root
  1-  0 pr
  1-  1 id 0/c25
  1-  2 sb 1/c27
  1-  3 dv c27/c28
  1-  4    //c28 now contains variance
  1-  5 id 10/c0
112
  0-  1 id c28/c27
  0-  2 dv c0/c27
  0-  3 ad c0/c27
  0-  4 dv 2/c27
  0-  5 id c27/c0
  0-  6 ad 1/c25
  0-  7 br 112   /c25,1,5
  0-  8    //c25 counts iterations
  0-  9 ty the standard deviation is
  0- 10 id c0/b0
  0- 11 ty b0
  0- 12 ty .

  0- 13 br next
```

```
free
  1-  0 pr
  1-  1 ty free student numbers:

  1-  2 ld 1/p15
  1-  3 ld 0/c28
  1-  4 ld 0/c27
  1-  5 ld 0/c26
17
  1-  0 pr
  1-  1 ad 1/c26
  1-  2 br ++3/c26,le,36
  1-  3 ld 0/p15
  1-  4 br next
  1-  5 ld a,(c27),16/b0
  1-  6 ad 28/c27
  1-  7 ca <------(16 blanks go here)
  1-  8 ad 1/c28
  1-  9 br ++3   /c28,le,12
  1- 10 ld 1/c28
  1- 11 ty

  1- 12 ld c26/b0
  1- 13 ty b0
  1- 14 ty
  1- 15 br 17
  1- 16 nx
  1- 17 br 17
end
```


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